



DOCUMENT-IDENTIFIER: US 5147308 A
TITLE: Surgical needle and stylet with a guard

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BSPR:

The present invention relates to surgical methods of probing the body with needles adapted to aspirate fluids or withdraw tissue and the like from desired locations in the body, and to improved apparatus for carrying out the same; being more particularly directed to needle-stylet structures in which the stylet occludes the needle lumen down to the distal insertion end opening during insertion into the body and is then removed to permit the attachment of, for example, syringes and the like as for the purpose of effecting fluid or tissue aspiration through the open needle lumen.

BSPR:

While the invention will illustratively first be described in connection with such fluid aspiration and biopsy or other tissue withdrawal modes of operation, it will be evident that the same needle-stylet apparatus is also used for the

introduction of fluids, air and other gases, drugs and other materials to desired locations in the body, as for diagnostic or therapeutic intervention and similar purposes, as well.

BSPR:

For such and related purposes, sterile needle-stylet units are commonly injected or inserted into many parts of the body including vessels such as arteries and veins; joint spaces as for therapy and diagnosis in knees, hips, ankles, spine, discs, shoulders, etc.; the spinal canal; hollow and solid organs; tumors; abscesses; pericardial (heart), pleural (lung) and perinephric (kidney) spaces; amniotic fluid, umbilical cord and parts of the fetus in connection with pregnant women; lymph channels; brain ventricles, and the vitreous of the eye, to mention some of the more common.

BSPR:

Despite the wide-spread universal use of needle aspiration, drainage, biopsy, space access, localization, ablation and injection, the problem underlying the present invention residing in the danger of sticking the fingers of the physician or nurse in the often frequent reinserting of the stylet into the

needle, as later more fully explained, has remained largely without solution;
and unfortunately currently leaves the profession dangerously exposed to the ever-increasing threats of infection by AIDS, virus, hepatitis and other innoculum that may be present on the stylet after its contact with the patient.

DEPR:

Referring to FIGS. 1 and 2, a shielding or guard surface 1, such as a rigid, puncture-proof conical funnel as of plastic of the like provided with a sleeve 1' at its apex for receiving the needle shank or shaft 2, is shown preferably slidably attached and longitudinally positionable along the needle between the proximal end hub 2' and the pointed insertion distal end 2". The before-mentioned needle-lumen-occluding stylet is shown at 3, with its lower tip 3' just slightly raised in FIG. 1 to open the distal insertion end 2" of the needle which it otherwise blocks when fully inserted into the needle. Such blocking or occluding is the prerequisite of inserting the needle into the body to probe toward the desired location therein, with the stylet withdrawal then being effected to permit aspiration or fluid application or other functions, as before explained, through the open needle.

DEPR:

Whether the needle has indeed reached the desired location in the body may be ascertained or monitored in various ways. Sometimes mere visual inspection after removal of the stylet may aid; and sometimes the failure of fluid or tissue withdrawal by the syringe attached to the needle hub will indicate error in or improper location. Such, indeed, could be the situation in FIG. 4, where the needle distal end 2" has penetrated the skin but not the uterus and has not reached the amniotic fluid which it is desired to aspirate. In FIG. 6, the needle has been re-occluded by the reinsertion of the stylet 3 while the needle is still in situ in the body, and advanced into the amniotic fluid. Attachment of the syringe S, FIG. 7, after removal of the stylet, with the shield 1 moved to abut the skin and delimit further penetration of the needle, will enable aspiration or suction of the desired fluid sample through the open needle bore into the syringe for laboratory analysis.

CLPR:

1. Surgical needle probing and aspiration having, in combination, an outer hollow needle provided with a bore extending from a proximal hub

end to a
distal insertion end, an inner removable stylet extending coaxially
along the
bore from the hub end to the insertion end of the needle, and
shielding guard
means intermediately apertured to receive the needle-stylet and
provided with
means for positioning the same at a predetermined position along
the needle
below the said proximal hub end of the needle, the guard means
extending
laterally of the external circumferential surface of the needle and
around the
needle sufficiently to protect the fingers of one hand holding the
needle
between the guard means and the said distal insertion end of the
needle from
contact with the stylet during its re-insertion by the other hand,
following
removal, into the said hub end of the needle, and in which means
is provided
for varying the said position of the guard means along the needle
to control or
limit the depth of penetration of the needle into the body and in
which said
guard means comprises means converging toward the needle and
there-provided
with sleeve means slidable along the needle for adjusting the
position of the
guard means therealong, and in which said guard means is conical.

CLPR:

2. Surgical needle probing and aspiration apparatus having, in combination, an outer hollow needle provided with a bore extending from a proximal hub end to a distal insertion end, an inner removable stylet extending coaxially along the bore from the hub end to the insertion end of the needle, and shielding guard means intermediately apertured to receive the needle-stylet and provided with means for positioning the same at a predetermined position along the needle below the said proximal hub end of the needle, the guard means extending laterally of the external circumferential surface of the needle and around the needle sufficiently to protect the fingers of one hand holding the needle between the guard means and the said distal insertion end of the needle from contact with the stylet during its re-insertion by the other hand, following removal, into the said hub end of the needle, and in which means is provided for varying the said position of the guard means along the needle to control or limit the depth of penetration of the needle into the body and in which said guard means comprises means converging toward the needle and the re-provided with sleeve means slidable along the needle for adjusting the position of the

guard means therealong and in which said sleeve means comprises
a sleeve
frictionally holding the same to the needle.